

## Heart Failure

This booklet has been developed by the Center for Heart Failure at Northwestern's Bluhm Cardiovascular Institute. It will help you to better understand:

- The causes and symptoms of heart failure.
- Your treatment plan.
- Ways to become an "active partner" in your care.

*If you have any questions or concerns, talk with your doctor or nurse.*

Being an active partner in your plan of care can help you feel better and live a longer and healthier life. This includes:

- Taking your heart failure medicines.
- Checking your weight every day.
- Following a low-salt diet.
- Stopping smoking.
- Avoiding drinking alcohol.
- Keeping appointments with your physician.
- Staying active.

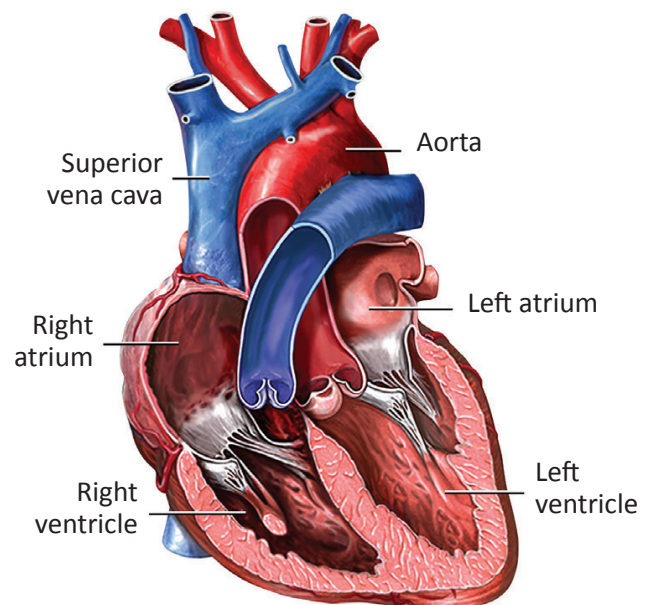
To better understand heart failure, it is helpful to know how the heart works.

### The Heart

The heart (see Figure 1) is a muscular organ about the size of a closed fist. Each heartbeat pumps blood and needed nutrients to the lungs and to all the body tissues. The heart has 4 chambers:

- The upper, thin-walled chambers are the right and left atrium.
- The 2 larger, more powerful chambers are the right and left ventricle.

**Figure 1**



The right atrium receives blood from the body, pumping it to the right ventricle. The right ventricle then pumps the blood to the lungs where it receives oxygen. The left atrium receives the oxygen-rich blood from the lungs and sends it to the left ventricle where the blood is returned to the body. With each heartbeat, the heart squeezes or contracts (systole “SIS’-to-le”) and then relaxes (diastole “di-AS’-to-le”).

## **What is Heart Failure?**

Heart failure does not mean that the heart has stopped working. It simply means that the heart is not pumping blood to the body as well as it should be. The body tries to make up for the reduced blood flow by making special chemicals (neurohormones), which cause:

- The body to retain fluid.
- The blood vessels to narrow.
- The heart rate to increase.

As a result, fluid builds up in the body. When fluid builds up in the lungs, belly (abdomen), legs, ankles, and feet; the body becomes congested. This is why heart failure is sometimes referred to as congestive heart failure.

Heart failure can affect the right side, the left side, or both sides of the heart.

### ***Ejection Fraction***

One way to measure the heart’s ability to contract is by checking the ejection fraction. The ejection fraction is the amount of blood the heart squeezes out in 1 beat. A normal ejection fraction is between 50 percent and 70 percent. A low ejection fraction is less than 45 percent.

- Heart failure with a low ejection fraction occurs when the heart does not squeeze well enough.
- Heart failure with a preserved ejection fraction occurs when the heart is stiff and does not relax well.

## **What Causes Heart Failure?**

There are many causes of heart failure. The most common are:

- Coronary Artery Disease – which blocks arteries in the heart and prevents blood flow.
- Heart Attack – which can damage the heart muscle and reduce the heart’s ability to pump.
- Hypertension (High Blood Pressure) – which causes extra strain on the heart.
- Cardiomyopathies – which are heart muscle problems that can affect how the heart works.
- Abnormal Heart Valves – which can affect the blood flow in the heart. Over time, the heart becomes enlarged and weak.
- Arrhythmias – which are abnormal heart beats that affect the pumping action of the heart.

Other causes of heart failure include:

- Viral infections.
- Thyroid disease.
- Lung disease.
- Alcohol intake.
- Some medicines for cancer treatment.
- Pregnancy.

## What are the Symptoms of Heart Failure?

Heart failure affects patients in different ways. Some patients may not have symptoms. Others may have symptoms that come and go. Symptoms may be mild or severe.

Heart failure can cause:

- Build-up of fluid in the body.
- Decreased blood flow to the body.
- Extra strain on the heart.

As a result, common signs of heart failure include:

- Shortness of breath.
- Cough.
- Feeling tired.
- Swelling in the feet and legs.
- Rapid weight gain (2 pounds or more in 1 day or 5 pounds or more in 1 week).
- Lack of appetite or nausea.
- Decreased energy in doing daily activities.
- Dizziness or fainting.
- Decreased urine output.
- Rapid or irregular heartbeat.
- Chest pain or pressure.

It is important to tell your doctor if you have any of these symptoms.

### ***Managing Your Symptoms***

Knowing the symptoms of heart failure can help you take action as soon as a new symptom or change in your current symptoms occurs. By taking action, you can feel better and stay out of the hospital.

Rapid weight gain is a warning sign. It indicates that heart failure is getting worse. If you gain 2 pounds or more in 1 day or 5 pounds or more in 1 week, call your doctor.

While you are at home, do a daily check-up.

- How are you feeling?
- Do you have swelling?
- Did you weigh yourself today and has your weight changed? Weigh yourself each day:

- At the same time before breakfast and after urinating.
- On the same scale.
- Wearing the same amount of clothing.
- Keep a written log of your daily weights.

## My Heart Failure Zones: A Guide to Care

<p><b>GREEN ZONE</b></p> <ul style="list-style-type: none"> <li>• No weight gain</li> <li>• No foot, leg or belly swelling</li> <li>• No shortness of breath</li> <li>• No decrease in ability to maintain daily activities</li> </ul>	<p><b>ALL CLEAR</b></p> <p><b>Your heart failure symptoms are under control</b>  <i>Continue to:</i></p> <ul style="list-style-type: none"> <li>• Weigh yourself at the same time every morning, before breakfast. Use the same scale and wear the same amount of clothes</li> <li>• Keep a written log of your weight</li> <li>• Follow a low salt diet (less than 2,000mg per day)</li> <li>• Check for swelling in legs and abdomen (belly)</li> <li>• Engage in daily activities with planned rest periods</li> <li>• Take all medicines as prescribed</li> <li>• Keep all follow up appointments</li> </ul>
<p><b>YELLOW ZONE</b></p> <ul style="list-style-type: none"> <li>• Gain 2 pounds or more in 1 day or 5 pounds or more in 1 week</li> <li>• Swelling of feet, legs or belly</li> <li>• Increasing shortness of breath</li> <li>• New onset of coughing</li> <li>• Dizziness when standing or sitting</li> <li>• Rapid or irregular heart rate</li> <li>• Chest pain that is relieved</li> </ul>	<p><b>CAUTION</b></p> <p><b>This is a warning</b></p> <ul style="list-style-type: none"> <li>• Call your healthcare provider            Doctor: _____            Phone: _____            Heart Failure Nurse: _____            Phone : _____</li> <li>• After hours, weekends and holidays:            Call _____</li> </ul>
<p><b>RED ZONE</b></p> <ul style="list-style-type: none"> <li>• Severe and constant shortness of breath</li> <li>• Fainting or "passing out"</li> <li>• Chest pain that persists or discomfort that is not relieved by nitroglycerin and lasts more than 15 minutes</li> <li>• Confusion or trouble thinking</li> </ul>	<p><b>ALERT</b></p> <p><b>You need immediate medical attention!</b></p> <ul style="list-style-type: none"> <li>• Call 911 or go to the nearest emergency department</li> <li>• Your family should notify your doctor or heart failure nurse</li> </ul>

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## How Do We Treat Heart Failure?

Treating your heart failure and keeping you healthy is a team effort. You are a partner on this team. Your treatment plan will include:

- Medicines.
- Lifestyle changes, such as diet and exercise.

Your doctor also might talk to you about procedures and surgeries that can help your heart failure.

## Medicines

Medicines are an important part of treating your heart failure and can:

- Improve the way your heart works.
- Reduce your symptoms.
- Help you live longer.
- Help improve your quality of life.

Always check with your doctor before taking any supplements or natural medicines. You should avoid natural or synthetic products that contain ephedra. Some medicines may also make your heart failure symptoms worse such as non-steroidal anti-inflammatory drugs (NSAIDs) like ibuprofen. Always talk to your physician before taking an over-the-counter medicine.

Remember to take your medicine every day. The most common types of medicines used for heart failure are listed below.

- ACE (angiotensin-converting enzyme) inhibitors/ARBs (angiotensin receptor blockers) – dilate or open up the blood vessels to allow the heart to pump better. These medicines block the effects of harmful stress hormones.
- Beta blockers – slow the heart rate and block the effects of the stress hormones that can damage the heart.
- Aldosterone antagonists – block aldosterone, a hormone that is made by the body that can make heart failure worse. These medicines can prevent further weakening of the heart.
- Diuretics (water pills) – help the body get rid of extra fluid and sodium. Sodium can cause the body to retain fluid.
- Digoxin – helps the heart to beat more strongly.
- Nitrates – relieve chest pain by dilating the blood vessels.
- Hydralazine – works in much the same way as ACE inhibitors and ARBs to open up the blood vessels. This allows the heart to pump more efficiently.

### ***How to Take Your Medicines***

- Take your medicines every day—the right dose at the right time.
- Do not skip a dose.
- If you miss a dose, do not double up on it.
- Do not stop taking a medicine if you think you are having side effects. Talk to your doctor or nurse first.
- If you cannot afford your medicine, talk to your physician.
- Do not run out of your medicine. Be aware of how many pills and refills you have left.

Have a system for managing your medicines:

- Keep a list.
- Keep your medicines in a place where you will remember to take them, such as on your nightstand or in the kitchen.
- Use a pillbox. If you need help filling your pillbox, ask a family member or your nurse or physician.
- If you are going away, bring enough medicine with you.
- Use only one pharmacy.
- Bring all of your pill bottles to your doctor's appointments. Bring all non-prescription medicines you take as well, such as herbs and supplements.

- Know which pill is your water pill, or diuretic. Sometimes your physician will change how much of this medicine you take.

Ask questions. If you have any questions about your medicines, ask your physician, pharmacist or nurse.

### **Medicine Goals**

Share this checklist with your physician or nurse so they can help you accomplish your goals:

- I will use a system to help me remember to take my medicines.
  - I will take my medicines every day.
  - I will make a list of all my medicines.
  - I will learn what my medicines are for.
  - I will bring all of my medicines with me to my physician's appointment.
  - I will (write your own goal below):
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### **Diet**

Heart failure patients need to follow a low-salt diet. A diet high in salt:

- Makes the body retain extra fluid.
- Causes the heart to work harder.
- Makes heart failure symptoms worse.

A low-salt diet can relieve this added stress to the heart. Following a low-salt diet will make you feel better.

#### **What is a Low-Salt Diet?**

Salt, or sodium, is found in many foods. A low-salt diet usually contains less than 2,000 mg of sodium per day. Ask your doctor how much sodium you can have each day. Your health care team can teach you how to follow a low-salt diet. This is a very important step in your treatment plan. If you have questions, ask your doctor or nurse.

General guidelines for a low-salt diet are listed below.

- Do not use a salt shaker. One teaspoon of salt has 2,400 mg of sodium.
- Do not add salt when you cook. Add fresh herbs, pepper, garlic or onion.
- Avoid the following foods as they are high in sodium:
  - Most lunch meats.
  - Cheese.
  - Ham.
  - Hot dogs.
  - Canned soups.
  - Pickles.

- Fast food.
- Snacks such as pretzels and potato chips.
- Choose foods low in salt for each meal.

Meal choices may include:

- Breakfast: Fruit, oatmeal, egg whites, shredded wheat, hot cereal (not instant).
- Lunch: Fresh fish, chicken, turkey, or meat (baked or broiled), salad, fresh fruit.
- Dinner: Fresh fish, chicken, turkey, or meat (baked or broiled), steamed rice, fresh or frozen vegetables.
- Snacks: Yogurt, unsalted popcorn, fresh fruit.

### ***Tips for Eating Out***

- Ask that salt not be added when your food is cooked.
- Avoid butter and cheese.
- Avoid fried foods.
- Choose oil and vinegar salad dressing; avoid creamy dressings like ranch and blue cheese.
- Limit fast food.
- Avoid bacon, sausage and ham.
- If nutrition information is available, look at the sodium content before making a selection.

### ***Cooking at Home***

- Do not add salt when you cook or eat.
- Use seasonings such as garlic, onion, pepper, or basil.
- Make your favorite foods with less sodium. Freeze extras for later.

### ***Foods to Avoid***

- Microwave meals.
- Frozen processed meals.
- Canned foods, including soups and vegetables.

### ***Read Food Labels***

Food packages have nutrition labels. The labels list how much sodium is in one serving. But, the package may have more than one serving. The sodium in one serving might not be too much. But, if you eat the whole package, you might be eating too much sodium.

Choose items labeled:

- No salt added.
- Low sodium.
- Sodium free.

The label in Figure 2 says there are 2 servings per container. The sodium content for one serving is 970 mg, but for the whole package, it is 1940 mg. You should not eat this food since it is too salty. Choose foods that have less than 140 mg of sodium per serving.

Be careful when foods are labeled “Lower Sodium.” You still must read the food label.

**Figure 2**

Sodium content per serving

Serving size

<b>Nutrition Facts</b>	
Serving Size 5 oz.	
Servings Per Container 2	
Amount Per Serving	
<b>Calories</b> 120	Calories From Fat 0
% Daily Value*	
<b>Total Fat</b> 0g	0%
Saturated Fat 0g	0%
<b>Cholesterol</b> 5mg	2g
<b>Sodium</b> 970mg	40%
<b>Total Carbohydrates</b> 26g	9%
Dietary Fiber 2g	9%
Sugar 16g	
<b>Protein</b> 3g	
Vitamin A 8%	Vitamin C 60%
Calcium 2%	Iron 2%

\*Percent daily values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs.

### **Diet Goals**

Decrease your sodium consumption in stages. Set realistic goals for yourself. Use this checklist to help you decrease your salt intake. Share this checklist with your physician or nurse so they can help you reach your goals:

- I will remove the salt shaker.
- I will use salt-free seasonings.
- I will ask for my food to be prepared without salt when I eat out.
- I will remove one food high in salt from my diet each week.
- I will avoid eating at fast-food restaurants.
- I will avoid canned foods and soups.
- I will eat more fresh fruits and vegetables.
- I will (write your own goal below):

### **Exercise**

Regular activity is important to your health. Being active can help you feel better, both physically and mentally. Being active also might improve your heart’s function and your energy level.

#### **Get Started**

- Talk to your physician before you start an exercise program.
- Select an activity that you like to do. Warm up first.
- Start slowly. Begin with five to 10 minutes of exercise, 3 to 5 times each week. The goal for most heart failure patients is to have 30 minutes of activity daily.



***Become More Active***

- Ride a stationary bike.
- Walk.
- Go to an exercise class.
- Do light gardening or housework.
- Dance.

***Tips for Safe Exercising***

- Always do warm-up exercises first.
- Wait one hour after eating before exercising.
- Do less intense activities for a longer time.
- Wear comfortable clothing and shoes.
- Avoid going outside when it is too hot or too cold.
- Cool down at the end of your exercise program.
- Slow down if you need to. If you are unable to have a conversation during activity, you are working too hard.

***Do Not Continue if You:***

- Are short of breath.
- Feel exhausted.
- Are ill or have a fever.

Some heart failure patients can go to a cardiac rehabilitation (rehab) program. Designed for heart patients, such programs focus on improving physical fitness and health. Physicians, nurses, dietitians and exercise physiologists work together to provide a tailored lifestyle program for you. Talk to your physician to see if cardiac rehab is an option for you.

***Exercise Goals:***

Share this checklist with your physician or nurse so they can help you reach your goals:

- I will take a short walk every day (even 10 minutes at a time is OK).
- I will do more of the activities I enjoy.
- I will allow for periods of rest.
- I will stretch for 10 minutes when I wake up at least 3 times a week.
- I will (write your own goals below):

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## Device Therapy

You may have a device in your heart. Some heart failure patients have a pacemaker, an implantable cardioverter defibrillator (ICD), or a combination device. It is very important that you communicate with your electrophysiology doctor or nurse on a regular basis. Certain devices require frequent checks.

- An ICD is a device that can protect you against dangerous abnormal heart rhythms. The ICD treats these rhythms by pacing, or shocking the heart back into a normal rhythm. The ICD also can act as a pacemaker.
- Cardiac Resynchronization Therapy (CRT) is a special pacemaker that triggers the ventricles to squeeze “in sync” and pump more effectively.

## Procedures and Treatments

Based on your needs, your doctor may talk with you about more advanced treatments. These may include special procedures or surgery:

- Coronary Artery Bypass Graft (CABG), or heart bypass surgery, creates a detour or bypass around the blocked portion of the coronary artery. This improves the blood supply to the heart muscle.
- Valve Surgery is done to repair or replace diseased heart valves.

If your heart failure has progressed, additional options may be available to you:

- **Ventricular assist device (VAD)** is a mechanical pump placed during surgery. It takes over the pumping action of one or both of the heart’s ventricles. It is used for patients with severe heart damage whose hearts cannot pump properly.
- **Heart transplant** is offered to patients who have advanced heart failure that can no longer be managed through the use of medicines and other therapies.

## Center for Heart Failure Clinical Trials

Clinical research trials search for new and better ways to treat and understand diseases. Northwestern Memorial Hospital currently participates in clinical research trials in the area of heart failure. Participating in a clinical research trial can be an exciting and informative process for the volunteer. Your physician may discuss current clinical research trials with you. Please consider the opportunity to volunteer. Your participation can help with the advancement of treatment for patients with heart failure.

## Be Prepared

Be prepared to be a “full partner” in managing your heart failure. Have the information you need at hand when you call the physician’s office and when you go to your physician’s appointments, so that you can ask clear questions and answer questions accurately. It may help to write down important information so you remember to tell your physician or nurse.

### ***Get Organized***

- Keep all of your medical records and health information in one place, such as in a binder or folder.
- If you are calling your physician's office with a question or concern, clearly explain what is going on. This way, the physician or nurse can better help you and adjust your treatment plan with you.
- Write your questions down on paper before you go to your appointment to help you remember what to ask.

### ***Bring Medical Information to Doctor Appointments***

- A list of all of your medicines or your pill bottles.
- A list of food and medicine allergies.
- Recent medical reports, such as test results, especially if they were done at a different hospital.
- The name and phone number of your home health company.
- The names and telephone numbers of all of the physicians who are caring for you.
- Your discharge instructions, if you were recently in the hospital.

### ***Topics You May Want to Discuss With your Physician***

- Your health goals.
- Financial problems. If you can't afford your medicine, let your physician or nurse know.
- Advance care planning.

## **Managing Your Feelings**

Medical studies show that there is a link between the mind and the body. Treatment for heart failure is most successful when we focus not only on the physical, but also on the emotional and behavioral health of the patient. Many patients feel hesitant to talk to anyone about their feelings. It is important to recognize that depression and anxiety can affect how you cope and care for yourself. In addition, treatment for heart failure involves making lifestyle changes that can be difficult.

### ***Recognize You May Need Help***

- Making needed lifestyle changes.
- Dealing with your emotions.

### ***Symptoms of Depression***

- Feeling down.
- Irritability.
- Withdrawal.
- Feeling more tired than usual.
- Feeling guilty or worthless.

- Hopelessness.
- Loss of interest in things and activities you used to enjoy.
- Thoughts of death or harming yourself.

### ***Symptoms of Anxiety***

- Excessive worry.
- Fear.
- Tension.
- Restlessness.
- Feeling shaky.
- Startling easily.
- Heart palpitations.

Northwestern's Bluhm Cardiovascular Institute offers a Cardiac Behavioral Medicine service that helps patients and families adjust to a diagnosis, such as heart failure.

Lifestyle changes are addressed in a supportive setting to help patients achieve their goals of:

- Quitting smoking.
- Losing weight.
- Adhering to a new exercise program.

The Cardiac Behavioral Medicine service can also help with:

- Stress.
- Depression.
- Anxiety.
- Behavior changes.
- Adjusting to a medical diagnosis.
- Coping with a chronic illness.
- Relaxation training.

For more information on cardiac behavioral medicine, please call 312-695-4965 or follow up with a health psychologist closer to your home.

### **Advance Care Planning**

Advance care planning allows for your wishes for medical treatment to be carried out if you become too ill to make decisions for yourself. To make sure your wishes are honored, discuss your medical care preference with your family, significant other and physician. Most importantly, complete advance directives.

## ***Types of Advance Directives***

- **A living will** is a document that helps guide healthcare professionals in your care if you are unable to make decisions. The document declares your wishes for the kind of medical care you want or do not want. In Illinois, a living will does not have to be prepared by an attorney and does not need to be notarized.
- **Healthcare power of attorney** allows another person to make medical decisions for you in case you are unable to do so. This person is known as your agent. The agent must be 18 years or older. You can specify in the document what care you want and do not want to receive. In Illinois, the power of attorney does not need to be prepared by an attorney and does not need to be notarized.

Even if you don't have a legal written document, it is important to talk to your family, loved ones and physicians about your values, preferences and goals for healthcare. By sharing this information with your loved ones, it will be easier for them to make decisions for you when you are unable to do so. Many times, by making an advance care plan, people feel relieved and at ease knowing that their wishes will be met.

We understand that these may be difficult topics to talk about. Communication and shared decision-making are very important in your treatment plan.

Northwestern Memorial's Health Learning Center offers information about advance directives. You may call 312-926-5465 to schedule an appointment with a health educator. You also may visit [hlc.nm.org/advance-directives.html](http://hlc.nm.org/advance-directives.html) for more information.

## **Palliative Care and Hospice Services**

Heart failure can often be managed with medications and dietary and lifestyle changes. At times, though, heart failure can progress. It is important for you and your family to discuss goals of care with your physician. For some patients, palliative care or hospice services may be an option to allow for continued symptom management and patient and family support. Talk with your physician or nurse if you would like to learn more about these services.

## **Summary**

This booklet is designed to be a resource as you take control of your heart failure. Have confidence in yourself as you successfully manage your health. You are encouraged to ask questions and attend the various classes and lectures Northwestern Memorial offers on cardiovascular diseases including heart failure. Please visit [nm.org](http://nm.org) and click on the "View Classes & Support Groups" tab for a full listing of current classes.

## For More Information

Please contact us with any questions, for consultations or to request additional materials:

Northwestern's Bluhm Cardiovascular Institute  
675 North Saint Clair Street  
Galter Pavilion, Suite 19-100  
Chicago, Illinois 60611

Northwestern Medical Faculty Foundation  
Division of Cardiac Surgery  
312-NM-HEART (312-664-3278)

At night or on weekends, ask for the Cardiothoracic Surgery fellow to be paged.

### **Internet Resources**

Bluhm Cardiovascular Institute at Northwestern Memorial Hospital (BCVI)

**[www.heart.nm.org](http://www.heart.nm.org)**

The BCVI cares for all types of heart conditions. Use this site to locate a physician or program to meet your needs.

American Heart Association (AHA)

**[www.americanheart.org](http://www.americanheart.org)**

The AHA has a wide variety of information on heart disease prevention and treatment.

Delicious Decisions

**[www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/Recipes/Welcome-to-Delicious-Decisions\\_UCM\\_301068\\_SubHomePage.jsp](http://www.heart.org/HEARTORG/GettingHealthy/NutritionCenter/Recipes/Welcome-to-Delicious-Decisions_UCM_301068_SubHomePage.jsp)**

Delicious Decisions is a nutrition website maintained by the American Heart Association.

### **Health Information Resources**

For more information, visit Northwestern Memorial Hospital's Alberto Culver Health Learning Center. This state-of-the-art health library is located on the 3rd floor of the Galter Pavilion. Health information professionals are available to help you find the information you need and provide you with personalized support at no charge. You may contact the Health Learning Center by calling 312-926-LINK (5465) or by sending an e-mail to [hlc@nm.org](mailto:hlc@nm.org).

For additional information about Northwestern Medicine, please visit our website at [nm.org](http://nm.org).

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*Para asistencia en español, por favor llamar al Departamento de Representantes para Pacientes al 312-926-3112.*

The entities that come together as Northwestern Medicine are committed to representing the communities we serve, fostering a culture of inclusion, delivering culturally competent care, providing access to treatment and programs in a nondiscriminatory manner and eliminating healthcare disparities. For questions, please call either Northwestern Memorial Hospital's Patient Representatives Department at 312-926-3112, TDD/TTY 312-926-6363 and/or the Northwestern Medical Group Patient Representatives Department at 312-695-1100, TDD/TTY 312-695-3661.

Developed by: NMH Surgical Nursing and the Division of Vascular Surgery with the Center for Vascular Disease



